MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories

Michigan Department of Community Health
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New updates in this issue:

- **Michigan:** An outbreak associated with an influenza A positive rapid test (long term care facility in the Central Region) is reported.
- **National:** MMWR article summarizes United States influenza activity from September to March.
- **International:** Human cases of H5N1 avian influenza are reported from Egypt and Vietnam.

****2009 Influenza A (H1N1) virus Updates****

On April 2, MDCH updated guidance for healthcare providers, local health departments and laboratories regarding influenza surveillance, reporting and testing for the upcoming summer and fall. These documents are now available at the websites listed below.

Please continue to reference the MDCH influenza website at www.michigan.gov/flu for additional 2009 H1N1 information. Local health departments can find guidance documents in the MI-HAN document library. In addition, additional laboratory-specific information is located at the Bureau of Laboratories H1N1 page at http://www.michigan.gov/mdch/0,1607,7-132-2945_5103-213906--,00.html.

****Influenza Surveillance Reports****

Michigan Disease Surveillance System: Data for the week ending April 10th showed a decrease in reported cases of aggregate influenza, which is most likely due to K-12 schools' spring breaks. Individual influenza and 2009 novel influenza cases remained similar to the previous week's levels. All reported influenza types were slightly lower than the levels reported for the same reporting period one year ago.

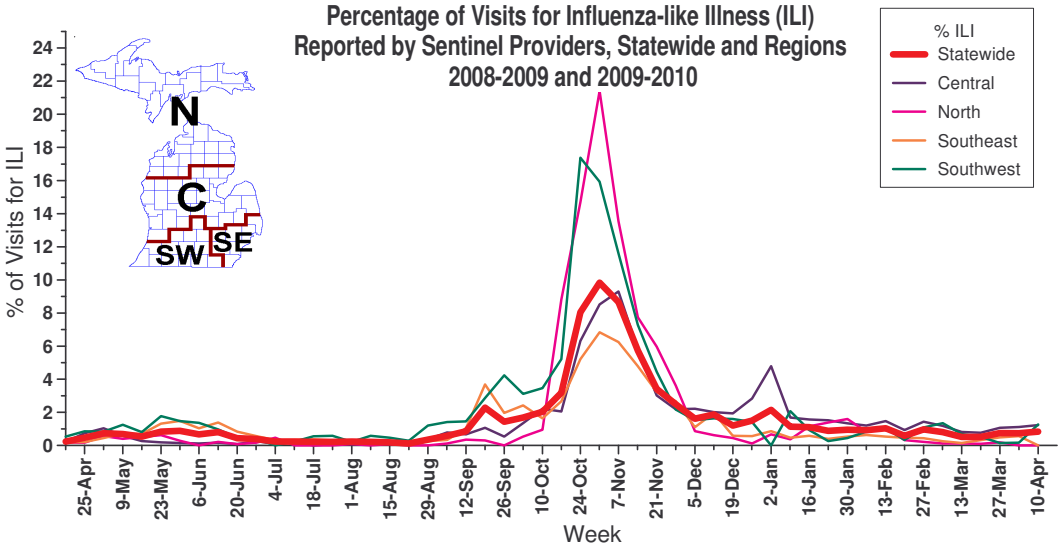
Emergency Department Surveillance: Emergency department visits from constitutional and respiratory complaints decreased slightly from the levels seen during the previous week. Constitutional complaints were slightly lower compared to the same reporting period in 2009, while respiratory complaints were consistent. During the past week, there were three constitutional alerts in the SW(2) and N(1) Influenza Surveillance Regions and three respiratory alerts in the C(2) and SW(1) Influenza Surveillance Regions.

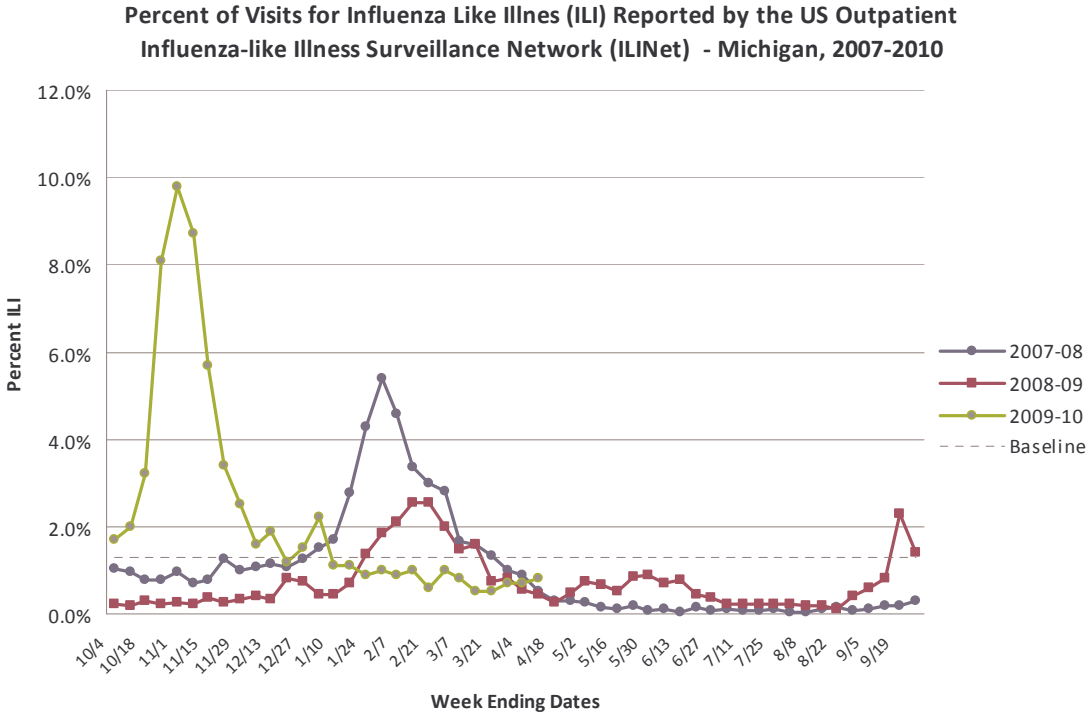
Over-the-Counter Product Surveillance: During April 4-10, pediatric electrolyte sales decreased, while all other indicators were consistent with the previous week. All indicators, except for a decrease in pediatric electrolyte sales, were consistent with levels seen during the identical reporting period in 2009.

During April 4-10, 2010, 1134 cases of flu-like illness and confirmed and probable cases of seasonal and novel influenza were reported in Michigan. 2133 hospitalizations and 78 deaths associated with influenza have been reported since September 1, 2009. This report is updated every Tuesday by 5:00 pm and is accessible at "Current H1N1 Activity" on the website http://www.michigan.gov/h1n1flu.

Sentinel Provider Surveillance (as of April 15): During the week ending April 10, 2010, the proportion of visits due to influenza-like illness (ILI) slightly increased to 0.8% overall. However, activity continued to remain below baseline levels (1.3%); 59 patient visits due to ILI were reported out of 7,011 office visits. 25 sentinel sites provided data for this report. Activity increased in two surveillance regions: Central (1.2%) and Southwest (1.3%); remained the same in the North (0.0%); and decreased in the Southeast (0.0%). Please note that these rates may change as additional reports are received.

As part of pandemic influenza surveillance, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.





Laboratory Surveillance (as of April 10): During April 4-10, MDCH Bureau of Laboratories identified no influenza isolates. For the 2009-2010 season (starting on October 4, 2009), MDCH BOL has identified 610 influenza isolates:

- 2009 Influenza A (H1N1): 609
- Influenza B: 1

Sentinel laboratory information for the week of April 4-10 was unavailable at the time of publication and will be included in the next edition of MI FluFocus.

Michigan Influenza Antigenic Characterization (as of April 15): One 2009 H1N1 influenza A virus from Michigan has undergone further characterization at the CDC. This virus was characterized as A/California/07/2009 (H1N1)-like, which is the recommended strain for the H1 component of the 2010-11 Northern Hemisphere vaccine.

Michigan Influenza Antiviral Resistance Data (as of April 15): Results are currently not available for antiviral resistance at CDC for the 2009-2010 season.

Antiviral resistance testing takes months to complete and cannot be used to guide individual patient treatment. However, CDC has made recommendations regarding the use of antivirals for treatment and prophylaxis of influenza. The guidance is available at http://www.cdc.gov/H1N1flu/recommendations.htm.

Influenza-Associated Pediatric Mortality (as of April 15): Five 2009 H1N1 influenza-associated pediatric mortalities (SE(3), SW, N) have been reported to MDCH for the 2009-2010 influenza season.

***CDC has asked states for information on any pediatric death associated with influenza. This includes not only any pediatric death (<18 years) resulting from a compatible illness with laboratory confirmation of influenza, but also any unexplained pediatric death with evidence of an infectious process. Please immediately call MDCH to ensure proper specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

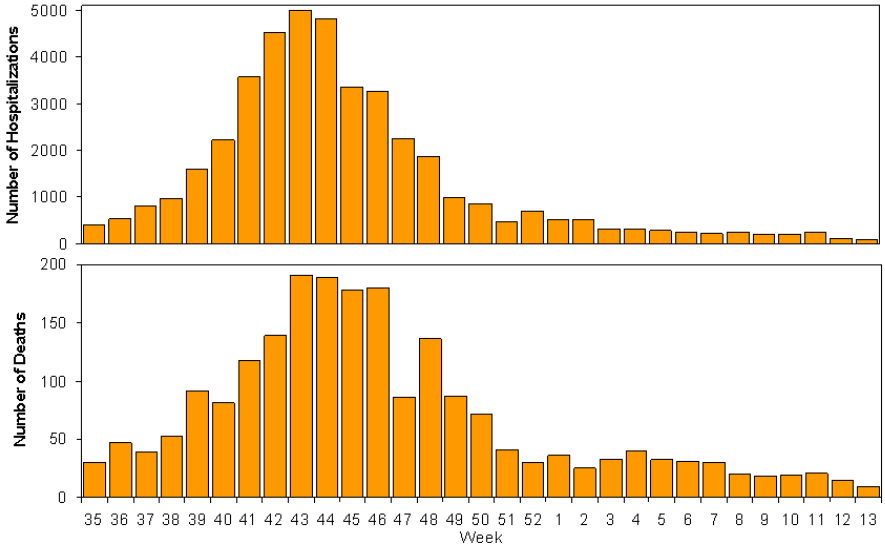
Influenza Congregate Settings Outbreaks (as of April 15): Seven congregate setting outbreaks with confirmatory novel influenza A H1N1 testing (2SE, 3 SW, 1C, 1N), and three outbreaks associated with positive influenza A tests (2C, 1N) have been reported to MDCH for the 2009-2010 influenza season. These are 8 school facilities and 2 long term care facilities. Human metapneumovirus was confirmed in one outbreak in a long term care facility (SW) in February.

During fall 2009, 567 influenza-related school and/or district closures in Michigan (Public Health Preparedness Region 1 - 55, Region 2N - 4, Region 2S – 8, Region 3 - 54, Region 5 - 153, Region 6 - 100, Region 7 - 109, Region 8 - 84) were reported.

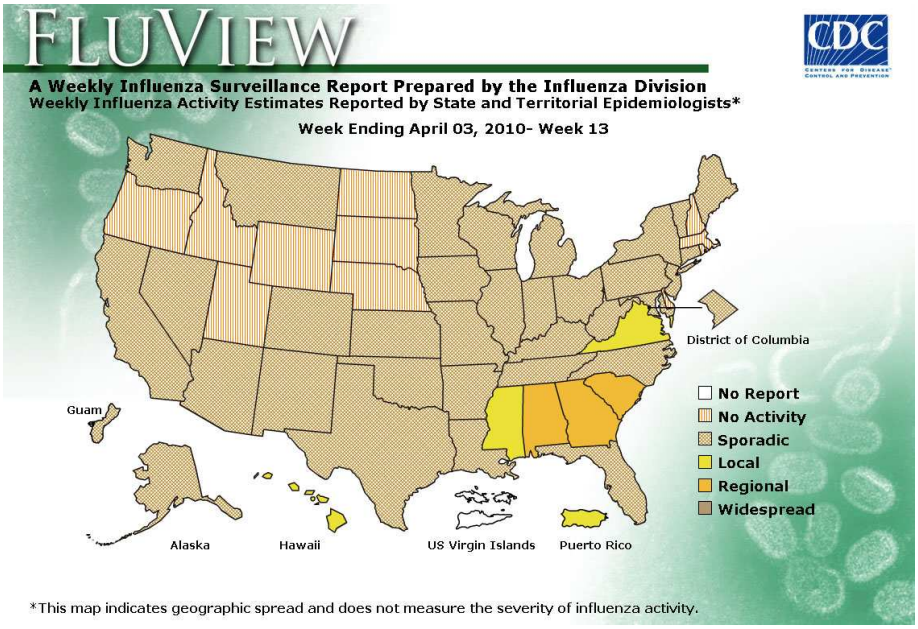
National (CDC [edited], April 9): During week 13 (March 28-April 3, 2010), influenza activity decreased slightly in the U.S. 105 (3.7%) specimens tested by U.S. World Health Organization and National Respiratory and Enteric Virus Surveillance System collaborating laboratories and reported to CDC were positive for influenza. All subtyped influenza A viruses reported to CDC were 2009 influenza A (H1N1) viruses. The proportion of deaths attributed to pneumonia and influenza was below the epidemic threshold. One pediatric death associated with laboratory confirmed influenza A was reported; the subtype was undetermined. The proportion of outpatient visits for influenza-like illness (ILI) was 1.1%, which is below the national baseline of 2.3%. All 10 regions reported ILI below region-specific baseline levels. No states reported widespread influenza activity. Three states reported regional influenza activity. Puerto Rico and three states reported local influenza activity. The District of Columbia, Guam and 33 states reported sporadic influenza activity. Eleven states reported no influenza activity.

The Aggregate Hospitalization and Death Reporting Activity (AHDRA) system was implemented on August 30, 2009. Jurisdictions report to CDC the number of hospitalizations and deaths resulting from all types or subtypes of influenza, not just those associated with 2009 H1N1. Counts were reset to zero on August 30, 2009. From August 30, 2009 – April 3, 2010, 41,821 laboratory-confirmed influenza-associated hospitalizations and 2,117 laboratory-confirmed influenza-associated deaths were reported to CDC. Reporting of influenza-associated hospitalizations and deaths through AHDRA was discontinued during the week ending April 3, 2010 (week 13). CDC will continue to use its traditional influenza surveillance systems to track the remainder of the 2009-10 season.

Weekly Laboratory-Confirmed Influenza-Associated Hospitalizations and Deaths Reported to AHDRA, National Summary, August 30, 2009 – April 3, 2010



To access the entire CDC weekly surveillance report, visit http://www.cdc.gov/flu/weekly/fluactivity.htm



From http://www.cdc.gov/h1n1flu/updates/us/#totalcases:

U.S. Influenza and Pneumonia-Associated Hospitalizations and Deaths from Aug 30, 2009–April 3, 2010

Cases Defined by	Hospitalizations	Deaths
Influenza Laboratory-Tests**	41,821	2,117

**States report weekly to CDC either 1) laboratory-confirmed influenza hospitalizations and deaths or 2) pneumonia and influenza syndrome-based cases of hospitalization and death resulting from all types or subtypes of influenza. Although only the laboratory confirmed cases are included in this report, CDC continues to analyze data both from laboratory confirmed and syndromic hospitalizations and deaths.

National (MMWR 59(14);423-430, April 15): "Update: Influenza Activity --- United States, August 30, 2009--March 27, 2010, and Composition of the 2010--11 Influenza Vaccine" is now available online at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5914a3.htm?s_cid=mm5914a3_e.

International (WHO pandemic update 95 [edited], April 9): In Southeast Asia, the most active transmission of pandemic influenza virus continues to be in Thailand, however, overall disease activity has declined substantially since peaking during late February 2009. During the most recent reporting week, 6.7% and 16% of sentinel respiratory samples from outpatients with ILI and patients hospitalized with pneumonia, respectively, were positive for pandemic influenza. Low levels of seasonal influenza H3N2 and type B viruses have also been detected in Thailand in recent weeks. In Malaysia, limited data suggests that recent pandemic influenza activity may be declining with fewer detections of new cases. In Indonesia, recent low level circulation of seasonal influenza H3N2 viruses appears to be subsiding.

In South Asia, limited data suggests the most active areas of pandemic influenza virus transmission continues to be in Bangladesh, where an increasing number of cases have detected since late February 2009. Overall pandemic influenza activity remained low across the rest of the subcontinent with persistence of low level circulation of pandemic influenza virus in western India.

In East Asia, pandemic influenza virus continues to circulate at very low levels as overall rates of respiratory diseases remained low across much of the region. In China, overall rates of ILI remained at expected seasonal levels while most current influenza activity was due to circulating seasonal influenza type B viruses (accounting for >90% influenza virus detections). In Mongolia, rates of ILI continued to decline after a recent peak of influenza activity associated with circulation of seasonal influenza type B viruses. Although overall rates of ILI and detections of influenza virus remain low in the Republic of Korea, Hong Kong SAR (China), and Chinese Taipei, an increasing proportion of virus isolates in recent weeks have been seasonal influenza type B viruses.

In Sub-Saharan Africa, limited data suggests that active circulation of pandemic influenza virus continues across parts of West and west-central Africa, and to a lesser extent in limited areas of East Africa. During early to mid-March 2009, 23% of respiratory sample tested positive for influenza in both Cote d'Ivoire and Ghana (the majority of virus isolates were pandemic H1N1). In Senegal, pandemic influenza transmission

remains active but may be declining as the rate of sentinel specimens testing positive for pandemic influenza fell from a peak of 67% during early February 2009 to 17% during the most recent reporting week. In Cameroon, 38% (13/34) of respiratory samples tested positive for influenza during the past two weeks, of which 71% were pandemic and 29% were seasonal influenza type B viruses. Localized areas of active pandemic influenza transmission persist in areas of Eastern Africa, particularly Rwanda and Tanzania. Pandemic influenza virus continues to be the predominant influenza virus circulating in West and East Africa, however, small numbers of seasonal influenza H3N2 viruses have also been identified.

In Europe, low levels of pandemic influenza virus continue circulate across limited areas. The overall proportion of sentinel respiratory samples testing positive for influenza remained low (6.2%); the total number of sentinel influenza type B virus detections exceeded that of pandemic influenza virus during the most recent reporting week. In Italy, 31% (9/29) of sentinel respiratory samples tested positive for influenza, all of which were seasonal influenza type B viruses. Most countries in the region reported a low intensity of respiratory diseases, and only Georgia reported geographically widespread influenza activity.

In tropical America, limited data suggests that overall influenza activity remains low but variable with localized areas of active transmission in several countries, including in Cuba, Guatemala, Peru, and Bolivia, all of which reported an increasing trend of respiratory diseases in association with localized to regional spread of influenza activity in at least one of the two recent reporting weeks. In Mexico, limited data suggests that localized active transmission of pandemic influenza virus continued to occur in several states throughout March 2010, particularly in parts of the Federal District which have reported recent increases in the number of severe and fatal pandemic H1N1 virus infections. In Brazil, increased levels of sentinel ILI have been reported across much of Brazil over the past month, however, most recent reports of severe and fatal illness due to pandemic influenza virus infection have been from the northern region.

In the northern temperate zones of the Americas, overall pandemic influenza transmission remained low as influenza virus continues to circulate at very low levels. In the United States, overall levels of ILI remained below the national baseline and were only slightly elevated above the regional baseline in the southwestern region (although this regional increase was not associated with increased sentinel detections of pandemic or other influenza viruses). The most active areas of pandemic influenza transmission in the United States currently appears to be in three southeastern states, all of which reported regional spread of influenza activity.

In temperate countries of the southern hemisphere, overall influenza activity remained low, with mostly sporadic detections of pandemic and seasonal influenza viruses. Of note, Chile has reported new detections of pandemic virus, including small numbers of severe cases, in at least three regions over the past two weeks; the significance of this early limited circulation of pandemic virus in advance of the usual winter influenza season is not yet known.

Sporadic detections of seasonal influenza H3N2 viruses continued to be reported across Asia, Africa, Australia, and the Americas, however, the most active (but overall low) circulation of seasonal H3N2 viruses has been reported in Indonesia.

MDCH reported **SPORADIC INFLUENZA ACTIVITY** to the CDC for the week ending April 10, 2010.

For those interested in additional influenza vaccination and education information, the MDCH *FluBytes* is available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html.

Novel Influenza Activity and Other News

WHO Pandemic Phase: Phase 6 – characterized by increased and sustained transmission in the general population. Human to human transmission of an animal or human-animal influenza reassortant virus has caused sustained community level outbreaks in at least two WHO regions.

National, Vaccine (American Academy of Neurology, April 13): A new study finds that reports of a neurologic disease called Guillain-Barré syndrome (GBS) have been low after 2009 H1N1 vaccination, according to a research study that will be presented as part of the late-breaking science program at the American Academy of Neurology's 62nd Annual Meeting in Toronto, April 10 – 17, 2010. The study is one of the first national reports of the occurrence of GBS after 2009 H1N1 vaccination.

GBS is a rare disorder in which the body's immune system attacks part of the peripheral nervous system,

causing tingling and weakness of the arms and legs. While it is not fully known what causes GBS, it is known that about two-thirds of people who get GBS do so several days or weeks after they have been sick with diarrhea or a respiratory illness. Except for the swine flu vaccine used in 1976, no other influenza vaccines have been clearly linked to GBS. It was not anticipated that the 2009 H1N1 vaccine would be associated with an increased risk of GBS.

Scientists analyzed information obtained from the Centers for Disease Control and Prevention and US Food and Drug Administration Vaccine Adverse Event Reporting System (VAERS) and found that there were 35 reports of GBS following 2009 H1N1 vaccination around the country by the end of the year 2009. This amounts to 3.5 reports of GBS per 10 million people vaccinated. All cases of GBS except one were reported within six weeks of vaccination, with 23 cases reported within the first two weeks after vaccine administration. One report of death and one of disability were reported in the 33 patients who were hospitalized.

The number of GBS cases reported by the same researcher was only slightly higher after seasonal flu vaccination in 2009: 57 reports of GBS were received by VAERS , an estimated rate of 7.3 reports of GBS per 10 million vaccinations. The rate of GBS in the general population is estimated to be between one to four cases per 100,000 persons per year.

"Although preliminary, these reported cases of GBS do not appear to show an increased risk of GBS following vaccination with either the 2009 H1N1 or the seasonal flu strain and the safety record for these vaccines is excellent," said study author Nizar Souayah, MD, with New Jersey Medical School in Newark. "CDC, FDA and neurologists around the world are continuing to closely monitor people after vaccination for this disease."

Since VAERS receives voluntary reports of adverse events from manufacturers, providers, vaccines, and caregivers, cases of illness may be either over or underreported, and calculation of actual rates is not possible. VAERS cannot determine cause-and-effect, and an adverse event report only indicates that the event occurred sometime after vaccination. The American Academy of Neurology, along with the Centers for Disease Control and Prevention reached out to neurologists in the fall of 2009, requesting that they report to VAERS any possible new cases of GBS following receipt of vaccination.

International, Human (WHO [edited], April 9): The Ministry of Health of Egypt has announced a new human case of A(H5N1) avian influenza infection. The case is an 18 year-old female from Etsa district, Fayoum Governorate. She was admitted to hospital on 31 March where she received oseltamivir treatment. She died on 4 April. Investigations into the source of infection indicated that the case had exposure to sick and dead poultry. The case was confirmed by the Egyptian Central Public Health Laboratories, a National Influenza Center of the WHO Global Influenza Surveillance Network (GISN). Of the 109 laboratory confirmed cases of Avian influenza A(H5N1) reported in Egypt, 34 have been fatal.

International, Human (Associated Press, April 13): Two Vietnamese from a poor, mountainous area have been infected with bird flu, and 11 others were quarantined with flulike symptoms, health officials said Tuesday.

A 22-year-old man and a 27-month-old girl remain hospitalized after testing positive for the H5N1 virus, said Hoang Van Linh, deputy director of northern Bac Kan province's health department. He said the 11 others, some of whom were relatives of the confirmed cases, had fallen ill with fever, coughing and shortness of breath.

They were given the antiviral Tamiflu and have since recovered. He said they were tested for bird flu, but the results have not come back.

Dead chickens were reported at the homes of the two patients, and the toddler's family is believed to have slaughtered and eaten some of the infected poultry, according to the Ministry of Health's Web site. Ly Quoc Khach, an infectious disease official from the provincial health department, said all 11 people, members of the Tay and Nung ethnic minorities, had contact with the sick birds, and he said he did not believe there would be any reason to fear possible human-to-human transmission if they did test positive.

The 22-year-old man remains on a respirator after being hospitalized April 2, while the toddler, who was admitted two days later, is in stable condition, Hoang said. All of the sick people's homes in Ma Tao commune have since been disinfected, and the infected poultry have been slaughtered, Ly said.

Vietnam has been hit with a spate of fresh H5N1 outbreaks among poultry, and two people have died

from the disease this year, according to the World health Organization, which confirms 59 deaths since late 2003.

The disease remains rare among people, with most cases linked to direct contact with infected poultry. But experts have long feared the virulent virus could mutate into a form that allows it to spread easily among people, possibly igniting a pandemic.

International, Avian (Reuters [edited], April 8): Outbreaks of H5N1 flu among birds in Europe came at the edges of cold fronts that caused wild birds to change migration patterns, scientists said on Thursday, suggesting cold snaps may signal future outbreaks.

Dutch and American researchers found European outbreaks of avian influenza during the 2005-2006 winter were driven by collective movements of wild waterbirds to places where the fresh water they need to feed and survive had not frozen.

"This has important implications for surveillance, which should target areas where temperatures are close to freezing in winter, especially in poultry-dense regions close to areas where waterfowl aggregate," the researchers wrote in a study in the Public Library of Science journal PloS Pathogens.

It is difficult for people to catch H5N1 bird flu, but when they do it can be deadly. Since 2003 it has infected 492 people and killed 291 of them, according to the World Health Organisation, and experts fear the H5N1 virus could mutate at any time into a form easily passed from one person to another.

The virus emerged more than a decade ago in poultry in Southeast Asia. In 2005 it spread outside Asia infecting both poultry and wild birds in the Middle East, Europe and Africa. Most human cases have been in Asia but Egypt has had 108 cases and 33 deaths.

Romanian officials reported an outbreak of bird flu last month on a poultry farm close to Ukraine in an area on an important migratory pathway for wild birds.

Leslie Reperant of Princeton University in the United States and Thijs Kuiken of the Erasmus Medical Centre in the Netherlands said their findings offered a possible way to predict and control where and when bird flu might erupt again. "Forecasts predicting near-freezing temperatures in Europe may act as an indication for concern," they wrote.

They found that most H5N1 outbreaks occurred at sites where maximum temperatures were between 0 degrees Celsius and 2 degrees Celsius. This was usually on the edge of cold fronts where fresh water remained unfrozen. "Many wild waterbirds need unfrozen bodies of fresh water in winter to feed," they wrote.

"To minimise the distance flown, they also try to stay as close as possible to the northern breeding grounds to which they will migrate during spring...The resulting congregation of different species of waterbirds along the freezing front likely created ideal conditions for the transmission of the H5N1 virus."

Michigan Wild Bird Surveillance (USDA, as of April 15): For the 2009 testing season (April 1, 2009-March 31, 2010), HPAI subtype H5N1 has not been recovered from any of the 111 Michigan samples tested to date, including 58 live wild birds, 39 hunter-killed birds and 14 morbidity/mortality specimens. H5N1 HPAI has not been recovered from 19,429 samples tested nationwide. For more information, visit the National HPAI Early Detection Data System at http://wildlifedisease.nbii.gov/ai/.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at http://www.michigan.gov/emergingdiseases.

Please contact Susan Peters at PetersS1@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

Contributors

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Table 1. H5N1 Influenza in Poultry (Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 4/12/10)

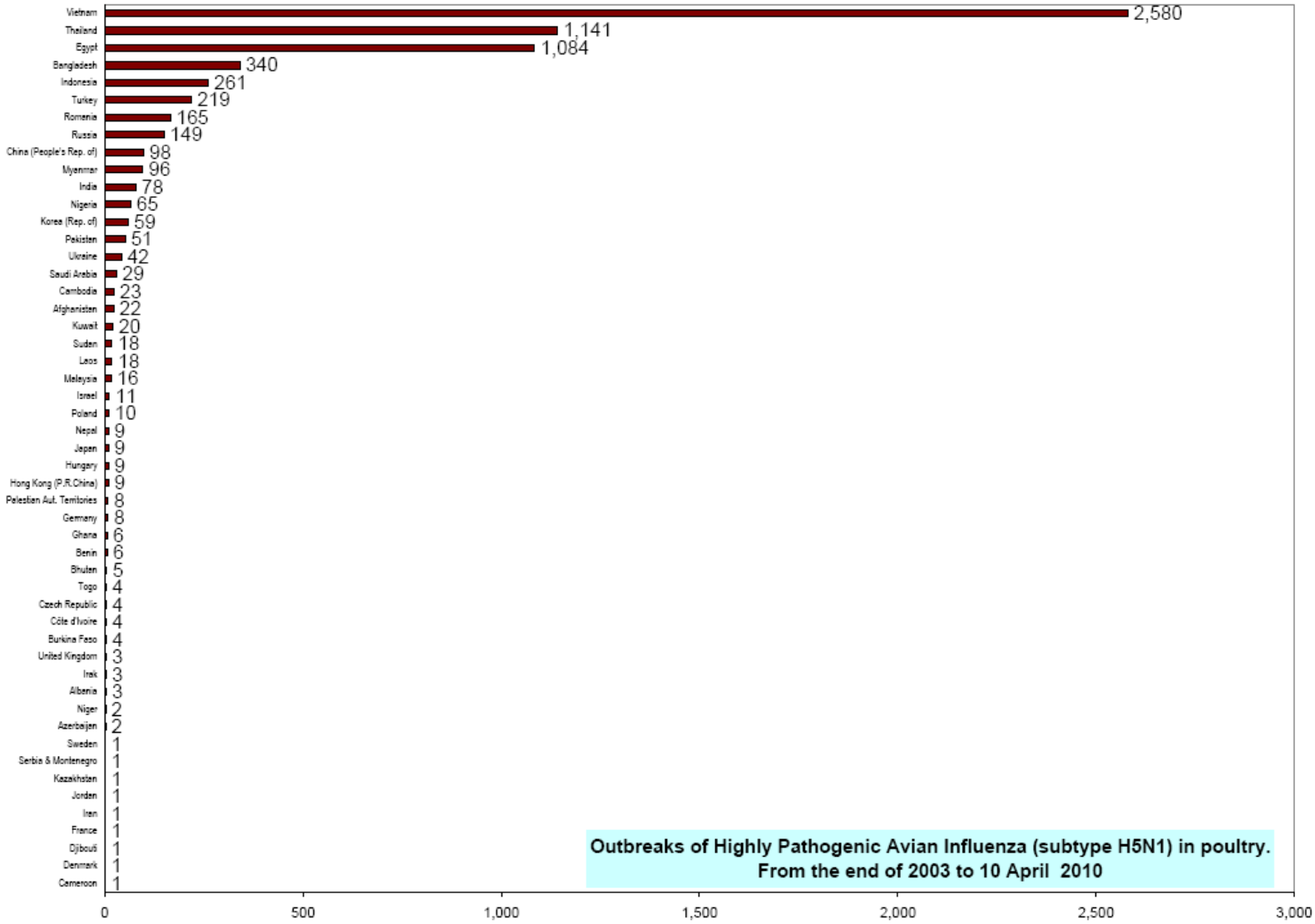

Table 2. H5N1 Influenza in Humans - Cases up to April 9, 2010. http://www.who.int/csr/disease/avian_influenza/country/cases_table_2010_04_09/en/index.html. Downloaded 4/12/2010. Cumulative number of lab-confirmed cases reported to WHO. Total cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		2010		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	1	0	0	0	9	7
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	0	0	38	25
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	39	4	19	7	109	34
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	21	19	1	1	163	135
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	5	5	5	2	117	59
Total	4	4	46	32	98	43	115	79	88	59	44	33	73	32	25	10	493	292